



## Cu(II) ion removal from aqueous solution using different adsorbents

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### ABSTRACT

Removal of Cu(II) ions from aqueous solution by different adsorbents such as Khangar, bangal gram husk (BGH), and orange mesocarp (OMS) was studied. The equilibrium adsorption level was determined as a function of pH, adsorbent dose, metal ion concentration, and contact time. The working conditions were optimized by using a Taguchi L<sub>16</sub> (4<sup>4</sup>) experimental design. Statistical tools viz. signal-to-noise ratio (S/N) and analysis of variance have been used at 95% confidence level for all considered parameters. It was found that pH is the most important parameter for removal of Cu(II) from aqueous solution. The maximum adsorption capacities for Cu(II) on Khangar, BGH and OMS adsorbents were found to be 92.14, 90.34, and 85.73%, respectively. Langmuir and Freundlich adsorption isotherms were used to model the equilibrium adsorption data and it was found that for Khangar both isotherms fit the data. The study revealed that out of three adsorbents Khangar was found to be the most promising adsorbent for the removal of Cu(II) ions from aqueous solution.

*Keywords:* Adsorption; Langmuir isotherm; Freundlich isotherm; Modeling; Taguchi method

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